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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,338	03/26/2004	Ahmad Absar	03108/0201075-US0	8253
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DARBY & DARBY P.C. P. O. BOX 5257 NEW YORK, NY 10150-5257			EXAMINER WARE, DEBORAH K	
			ART UNIT 1651	PAPER NUMBER

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/810,338

Applicant(s)

ABSAR ET AL.

Examiner

Deborah K. Ware

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claims 1-12 are presented for reconsideration on the merits.

#### ***Claim Objections***

Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. When the fungus is alternatively a fungal extract as claimed the claim 1 is not further limited because claim 1 already includes this limitation since it can be alternatively drawn to a fungal extract, see claim 1. It is suggested that Applicants delete "or fungal extract" from claim 5 and insert —or—in place of ", " between "whole cell form" and "wet solid form" and also insert —wet—before "fungus" at line 1 of claim 5.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims lack antecedent basis for the recitation of "filtering oxide nanoparticles" at line 4 of claim 1. It is, therefore, suggested to insert —the—before "filtering oxide nanoparticles".

***Response to Amendment***

The amendments filed February 8, 2006 and May 25, 2006, have been received and entered. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Response to Arguments***

The previous rejection under 35 USC 103 has been removed and in light of the discovery of better art a new rejection under this statute is set forth below.

***Claim Rejections - 35 USC § 103***

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over newly cited Mukherjee et al (6783963) in view of Lauf et al (6444453) and Li et al (5527466), all cited on enclosed PTO-892 Form.

Claims are drawn to a process for producing oxide nanoparticles while controlling their shape and size comprising incubating a wet fungus or extract with a metal salt solution to obtain a biomass, separating the biomass and filtering oxide nanoparticles from the biomass.

Mukherjee et al teach a process for producing sulfide nanoparticles comprising incubating a wet fungus or extract with a metal salt solution to obtain a biomass, separating the biomass and filtering nanoparticles from the biomass. Note column 3, lines 30-45 and 51 and 67. Also note column 5, line 41 and column 6, lines 1-45.

Claims differ from Mukherjee et al in that the synthesis of shape, size and polymorph controlled oxide nanoparticles are not produced.

Lauf et al teach a process for producing mixed oxide nanoparticles comprising treating a thermophilic microorganism with a metal salt solution to produce oxide nanoparticles using a temperature between 25 and 85 degrees celsius, note column 13, lines 30-35 and column 14, lines 20-25.

Li et al teach obtaining/removing oxides from a biomass by filtering during wet oxidation of sludges between a range of pore sizes that include at least 1 micron, note column 1, lines 15-20, and column 2, lines 61. The materials so obtained can be in various shapes and sizes, note column 5, lines 45-55.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to select for a fungal microorganism as disclosed by Mukherjee et al to provide for the synthesis of shape, size and polymorph controlled oxide nanoparticles as disclosed by Lauf et al and Li et al. Mukherjee et al clearly teach that nanoparticles can be produced or synthesized by a process comprising incubating a wet fungus or fungal extract with an aqueous metal salt solution, to obtain a biomass, separating the biomass and filtering nanoparticles therefrom.

The temperature disclosed by Mukherjee et al is clearly between 15 to 40 degrees celsius, 23 to 33 degrees celsius and 25 to 29 degrees celsius, note column 2, lines 53-55. The time period is also disclosed at column 2, line 22 wherein 2 or more hours is clearly taught. The metal salt can be a zinc sulfate, column 2, line 10. The fungus can be of the genus *Fusarium*, note column 3, line 32. The metal salt is not less

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than 1 mM, note column 3, lines 65-66. Further, the wet fungus is in the range of 10 to 60 mgs, note column 6, line 36. In addition, Zinc is a selected transition metal, note column 2, line 10.

Lauf et al clearly disclose a treatment temperature range within the claimed range, note column 14, line 30. Also to select for a different thermophilic microorganism is taught, or at least suggested, by the cited prior art combination because the temperature range disclosed by Mukherjee et al clearly suggests a thermophilic fungus. Therefore, to employ the identical conditions on a thermophilic microorganism clearly recognized in the prior art to be capable of producing nanoparticles at those conditions is well within the purview of an ordinary artisan. Furthermore, Li et al clearly recognized synthesis of shape, size and polymorph controlled particles by selectively controlling filter pore size and employing a filtering step as claimed by Applicants' process.

The pore size is clearly disclosed by Li et al to be selected within the range of at least 1 micron to obtain varied sizes and shapes of particles of materials. Hence the selection of a filtering step and pore size to provide synthesis of shape, size and polymorph controlled oxide nanoparticles is within the skill of an ordinary artisan. No unexpected results have been obtained and one of skill would have been motivated to select for a fungus microorganism because it is well recognized to produce nanoparticles. Thermophilic microorganisms are well known to produce oxide nanoparticles and to select for a thermophilic fungus is suggested by the cited prior art combination. The claims are *prima facie* obvious, therefore.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims U.S. Patent No. 6,783,963 ('963) in view of Lauf et al and Li et al.

Claims are discussed above.

Each of these cited prior art documents are also discussed above.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to select for a fungal microorganism as disclosed by Mukherjee et al to provide for the synthesis of shape, size and polymorph controlled oxide nanoparticles as disclosed by Lauf et al and Li et al. Mukherjee et al clearly teach that nanoparticles can be produced or synthesized by a process comprising

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incubating a wet fungus or fungal extract with an aqueous metal salt solution, to obtain a biomass, separating the biomass and filtering nanoparticles therefrom. To select for controlled shape and size of these particles as disclosed by Li et al is clearly within the purview of an artisan. Each of the claim limitations are either claimed by '963 or disclosed by Lauf et al and Li et al. To select for a fungus is clearly an obvious modification since the use of thermophilic microorganisms to produce oxide nanoparticles is disclosed by Lauf et al. One of skill would have been motivated to select for a fungus employing the identical conditions for producing oxide nanoparticles because nanoparticles are produced by '963 and thermophicity of the fungus is suggested by the cited prior art because of the disclosed overlapping temperatures in which both '963 and Lauf et al disclose are successful for producing sulfide and oxide nanoparticles. The claims are hence obvious for these reasons and for those discussed above.

All claims fail to be patentably distinguishable over the state of the art discussed above and cited on the enclosed PTO-892 and/or PTO-1449. Therefore, the claims are properly rejected.

The remaining references listed on the enclosed PTO-892 and/or PTO-1449 are cited to further show the state of the art.

No claims are allowed.




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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah K. Ware whose telephone number is 571-272-0924. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**DEBORAH K. WARE**  
**PATENT EXAMINER**  
Deborah K. Ware  
September 2, 2006